

ATTORNEY DOCKET NO. 01-P-002 (STMI01-00013)

U.S. SERIAL NO. 09/871,463

PATENT

PENDING CLAIMS:

Please amend the claims as follows, substituting any amended claim(s) for the corresponding pending claim(s):

1 1. (withdrawn) A method of forming a conductive structure within an integrated circuit
2 comprising:

3 forming a conformal tungsten layer over a dielectric layer and within openings within
4 the dielectric layer;

5 forming a protective barrier layer over the tungsten layer, wherein the protective barrier
6 layer comprises a material for which removal by chemical mechanical polishing is primarily
7 mechanical; and

8 removing at least portions of the protective barrier layer and the tungsten layer by
9 chemical mechanical polishing.

1 2. (withdrawn) The method as set forth in Claim 1 wherein the step of forming a protective
2 barrier layer over the tungsten layer further comprises:

3 forming a titanium or titanium nitride layer on the tungsten layer.

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1 **3. (withdrawn) The method as set forth in Claim 2 wherein the step of removing at least**
2 **portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing**
3 **further comprises:**

4 **removing portions of the tungsten layer overlying the dielectric layer without removing**
5 **portions of the tungsten layer within the openings within the dielectric layer.**

1 **4. (withdrawn) The method as set forth in Claim 3 wherein the step of removing at least**
2 **portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing**
3 **further comprises:**

4 **removing all of the protective barrier layer.**

1 **5. (withdrawn) The method as set forth in Claim 3 wherein the step of removing at least**
2 **portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing**
3 **further comprises:**

4 **removing portions of the protective barrier layer overlying dielectric regions between**
5 **the openings within the dielectric layer.**

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1 6. (withdrawn) The method as set forth in Claim 5 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 after removing portions of the protective barrier layer overlying the dielectric regions
5 between the openings within the dielectric layer, removing portions of the tungsten layer
6 overlying the dielectric regions between the openings within the dielectric layer; and

7 during removal of portions of the tungsten layer overlying the dielectric regions between
8 the openings within the dielectric layer, removing portions of the protective barrier layer
9 overlying the openings within the dielectric layer.

1 7. (withdrawn) The method as set forth in Claim 2 wherein the step of removing at least
2 portions of the protective barrier layer and the tungsten layer by chemical mechanical polishing
3 further comprises:

4 removing portions of the protective barrier layer and the tungsten layer overlying
5 dielectric regions between the openings within the dielectric layer to planarize remaining
6 portions of the tungsten layer and remaining portions of the protective barrier layer, if any, with
7 the dielectric layer.

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1 **8. (previously amended) A portion of an integrated circuit structure comprising:**

2 **a dielectric layer over a substrate;**

3 **a conformal tungsten layer over the dielectric layer and within openings within the**
4 **dielectric layer; and**

5 **a protective barrier layer over the tungsten layer and within the openings, wherein the**
6 **protective barrier layer comprises a material for which removal by chemical mechanical**
7 **polishing is primarily mechanical.**

1 **9. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8**
2 **wherein the protective barrier layer is titanium or titanium nitride.**

1 **10. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8**
2 **wherein portions of the tungsten layer within the openings are thicker than portions of the**
3 **tungsten layer over the dielectric layer.**

1 **11. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8**
2 **wherein the protective barrier layer overlies the entire tungsten layer.**

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1 12. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the protective barrier layer overlies portions of the tungsten layer within the openings
3 but not portions of the tungsten layer over the dielectric layer.

1 13. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the tungsten layer has a thickness of between about 4500 and 8000 angstroms.

1 14. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein the protective barrier layer has a thickness of between about 100 and 800 angstroms.

1 15. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 8
2 wherein at least one opening within the dielectric layer is sized to form a capacitive electrode
3 from tungsten within the at least one opening.

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1 **16. (previously amended) A portion of an integrated circuit structure comprising:**
2 **a dielectric layer having an opening therein;**
3 **tungsten within the opening; and**
4 **a portion of a protective barrier layer over a central region of the tungsten and within the**
5 **opening, wherein the portion of the protective barrier layer comprises a material for which**
6 **removal by chemical mechanical polishing is primarily mechanical.**

1 **17. (currently amended) The portion of an integrated circuit structure as set forth in Claim 16**
2 **wherein an upper surface of the tungsten is exposed around the portion of the protective barrier**
3 **layer.**

1 **18. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16**
2 **wherein the portion of the protective barrier layer is titanium or titanium nitride.**

1 **19. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16**
2 **wherein the tungsten and the portion of the protective barrier layer form an upper surface which**
3 **is substantially planar with an upper surface of the dielectric layer.**

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- 1 20. (unchanged/original) The portion of an integrated circuit structure as set forth in Claim 16
2 wherein the opening within the dielectric layer is sized to form a capacitive electrode from the
3 tungsten within the opening.